ABSTRACT

THESIS: Simvastatin treatment modulates the immune response, increasing the survival of mice infected with *Staphylococcus aureus*

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Staphylococcus aureus, the most prevalant etiologic agent causing sepsis (a damaging inflammatory response), is traditionally cleared with antibiotics. Increased numbers of antibiotic-resistant strains mandate additional treatments to clear infections and prevent sepsis. There is evidence that suggests the lipid-lowering drug simvastatin may be beneficial for treating *S. aureus* infections due to its anti-inflammatory and immunomodulatory effects. In this study we pretreated 8-13 week old, male and female Balb/c and C57BL/6 mice with 1000 ng/g [BW] simvastatin in ethanol at 18 and 3 hours prior to *S. aureus* infection. We subsequently administered 10 mg/kg [BW] gentamicin in saline at 3, 6, 12, 24, and 48 hour timepoints. Another group of mice did not receive simvastatin treatment, and the final group received control treatments and was not infected with *S. aureus*. Our studies demonstrate that simvastatin may down-regulate sepsis-inducing inflammatory responses in *S. aureus*-infected C57BL/6 mice.